(12) UK Patent Application (19) GB (11) 2 427 892 (13) A

(43) Date of A Publication 10.01.2007

(21) Application No: 0612115.6

(22) Date of Filing: 19.06.2006

(30) Priority Data:
(31) 4412005 (32) 30.06.2005 (33) AT

(51) INT CL:
E03B 9/00 (2006.01) *E03B 9/08* (2006.01)
E03B 9/12 (2006.01)

(52) UK CL (Edition X):
E1X XK7K

(56) Documents Cited:
None

(58) Field of Search:
UK CL (Edition X) E1X
INT CL E03B
Other:

(71) Applicant(s):
E. Hawle Armaturenwerke Gmbh
(Incorporated in Austria)
Wagrainerstrasse 13, A-4840 Vöcklabruck,
Austria

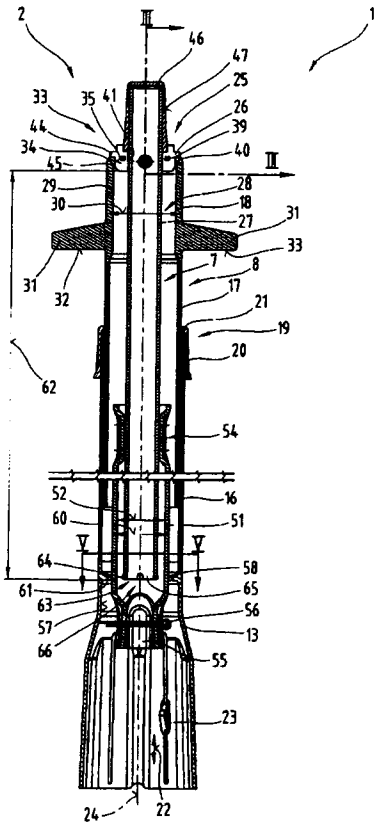
(72) Inventor(s):
Andreas Hauser
Franz Lehner

(74) Agent and/or Address for Service:
Baron & Warren
19 South End, Kensington, LONDON,
W8 5BU, United Kingdom

(54) Abstract Title: **Operating mechanism for a shut-off valve**

(57) An operating mechanism (1) for a shut-off valve (3) fitted in a supply pipe (4) for a liquid medium laid under the ground, comprises a telescopically displaceable operating rod (7) which can be coupled with a positioning spindle (15) of the shut-off valve (3) and a telescopically displaceable two-part protective casing (8). The latter is provided with a top bell (13) for fitting on the shut-off valve (3) and has a linking bush (18) with a rotary bearing (26) for the operating rod (7). The rotary bearing (26) is provided in the form of half shells (36, 37) through which a drive rod (28), in particular a square pipe (27), extends, and which is mounted in a terminal end-face bearing bead (34) of the linking bush (18) so as to be rotatable. A support mechanism (61) for the operating rod (7) forming a concentric orifice enclosing it is disposed in the top bell (13) at a distance (62) from the rotary bearing (26).

Fig.2



GB 2 427 892 A

INSTALLATION FITTING

The invention relates to an operating mechanism of the type outlined in the introductory part of claim 1.

Patent specification DE 199 61 420 A1 discloses an installation fitting with a telescopic operating rod and a telescopic casing tube which is placed on a shut-off valve of a supply pipe running under the ground. In the region where it extends out of the casing pipe, the operating rod is provided with a solid square end for applying a tool, which is mounted in a bearing arrangement of the casing tube and has catch elements, by means of which the square end is mounted in the casing tube so that it can rotate but is fixed in the axial direction.

Patent specification DE 199 61 418 C2 discloses an installation fitting comprising a telescopic protective casing and a telescopic operating rod, with a bell-shaped flared region of the protective casing for accommodating a top part of a shut-off valve. The bell-shaped flared region is connected to a sleeve pipe by means of a safety latch, e.g. a plug-in connection, bayonet fitting, etc..

The objective of the invention is to propose an operating rod, in particular an installation fitting, which can be easily pre-assembled and facilitates fitting under the ground.

This objective is achieved on the basis of the features defined in the characterising part of claim 1. The surprising advantage of this approach is that the operating rod is guided exactly coaxially over a maximum distance in the protective casing, irrespective of the extracted length of the telescopic protective casing and the drive rod, thereby making it easier to establish the driving connection between a drive pipe of the operating rod and a positioning spindle of the shut-off valve during assembly.

One possible embodiment is defined in claim 2, whereby the task of introducing the operating rod into the protective casing is made easier during assembly.

Also of advantage is another embodiment defined in claim 3, which ensures that a key nut is reliably retained.

Advantage is also to be had from another embodiment defined in claim 4, because an annular bearing surface is formed by a groove extending peripherally in half-shells constituting a rotary bearing, which are oriented in exact alignment due to the engagement of a retaining bead.

The embodiment defined in claim 5 provides a reliable rotary connection between the drive rod or square-end pipe and the rotary bearing.

The assembly process is facilitated by means of another embodiment defined in claim 6.

Also of advantage is an embodiment defined in claim 7, whereby an exact radial bearing is provided for the operating rod.

The embodiments defined in claims 8 to 10 are of advantage because they provide a radial support for the operating rod on the one hand and a braking action occurs due to increased frictional resistance, on the other hand, which prevents the installation fitting shifting of its own accord.

The advantage of the embodiment defined in claims 11 and 12 is that a simple drive connection is established whilst saving on additional components.

The embodiment defined in claim 13 results in a compact design.

Also of advantage is an embodiment defined in claim 14 because a reliable end stop is provided for the telescopic movement.

As a result of an embodiment defined in claim 15, the top bell can be easily fitted on a housing top part of the shut-off valve, providing a reliable mounting for the protective casing without the need for additional fixing means and reducing the work involved in fitting.

An embodiment defined in claim 16 is of advantage because it offers a simple means of adapting to different designs of shut-off valves.

In one advantageous embodiment defined in claim 17, the top bell is retained centrally on the shut-off valve.

Also of advantage is another embodiment defined in claim 18, whereby a positioning ring which is easy to manufacture and works reliably is provided between the tubular portions of the protective casing and fixes the length adjustment.

As defined in claim 19, the installation fitting is reliably accommodated and correctly positioned in conjunction with a bottom plate of an installation pot.

The embodiment defined in claim 20 results in an embodiment affording appropriate strength and protection against corrosion.

Finally, an embodiment defined in claim 21 is of advantage since it enables components to be manufactured inexpensively but they are nevertheless resistant to external influences.

The invention will be described in more detail below on the basis of examples of embodiments illustrated in the appended drawings. Of these:

Fig. 1 is a simplified diagram illustrating an operating mechanism proposed by the invention for a shut-off valve of a supply pipe disposed under the ground;

Fig. 2 is a section through the operating mechanism;

Fig. 3 shows a detail of the operating mechanism with a rotary bearing, viewed in section along line III-III indicated in Fig. 2;

Fig. 4 shows the operating mechanism in the region of the rotary bearing, viewed in section along line IV-IV indicated in Fig. 3;

Fig. 5 shows a detail of the operating mechanism in the region of a top bell, viewed in section along line V-V indicated in Fig. 2.

Firstly, it should be pointed out that the same parts described in the different embodiments are denoted by the same reference numbers and the same component names and the disclosures made throughout the description can be transposed in terms of meaning to same parts bearing

the same reference numbers or same component names. Furthermore, the positions chosen for the purposes of the description, such as top, bottom, side, etc,. relate to the drawing specifically being described and can be transposed in terms of meaning to a new position when another position is being described. Individual features or combinations of features from the different embodiments illustrated and described may be construed as independent inventive solutions or solutions proposed by the invention in their own right.

Fig. 1 illustrates an operating mechanism 1, in particular an installation fitting 2, for a shut-off valve 3, which is fitted in a supply pipe 4, in particular for a liquid medium, laid under the ground. Supply pipes 4 of this type, in particular for water, are laid to protect them from frost and an installation depth 5 from a surface 6 varies within a specific range of tolerance. Consequently, installation fittings 2 of this type are designed to be adjustable in length and a way of achieving this known from the prior art is to provide an operating rod 7 and a casing tube 8 surrounding it in a telescopic arrangement. From a drive point of view, the installation fitting 2 is accommodated in an installation pot 10, which is recessed in the surface 6 and secured, and can be closed off by means of a removable cover 11, and at the output end, the installation fitting 2 is fitted on a housing part 14 of the shut-off valve 3 by means of a top bell 13 disposed on the casing tube 8, whilst the operating rod 7 is coupled with the shut-off valve 3 by means of a positioning spindle 15. In a preferred embodiment, the installation pot 10 and cover 11 are made from cast iron. The top face of the installation pot 10 and cover 11 sit flush with the surface 6 of the surrounding ground, which is usually a road with an asphalt or concrete surface.

Figs. 2 to 5 provide detailed illustrations of the installation fitting 2, the main components of which are the telescopically designed operating rod 7 and the telescopically designed, tubular protective casing 8.

The protective casing 8 comprises an outer tube portion 16 which is joined at its end face in a flush arrangement to the top bell 13 and an inner tube portion 17 extending through the tube portion 16 and longitudinally displaceable in it, which is joined at its end face in a flush arrangement to a linking bush 18.

It should be pointed out that, instead of the "flush" connection illustrated and described here,

the tube portions 16, 17 could also be connected to the top bell 13 and the linking bush 18 by means of a sleeve enclosing the joining point and by sleeve welding.

In an end region 19 facing the linking bush 18, a positioning ring 20 is disposed on and surrounding the outer tube portion 16, which fits onto the outer tube portion 16 by means of a force fit and has a clamping bead 21 extending peripherally in the direction of the inner tube portion 17, by means of which the relative position of the tube portions 16, 17 can be fixed with respect to one another by means of a frictional grip to achieve a variable installation length corresponding to a telescopic displacement path.

The top bell 13 joined to the outer tube portion 16 has a region which is wider in cross-section facing the shut-off valve 3, with a cross-section adapted to the shut-off valve 3 in order to accommodate a neck region of the shut-off valve 3, and retaining lugs 23 providing a mount on the housing part 14 are disposed on an internal wall of the top bell 13 projecting in the direction of the shut-off valve 3.

Retaining lugs 23 of this type are distributed around the periphery and at least two are provided diametrically by reference to a longitudinal mid-axis 24 of the installation fitting 2. Once the installation fitting 2 with the top bell 13 has been placed on the shut-off valve 3, this provides a lock to prevent the protective casing 8 from being removed. The retaining lugs 23 are preferably integrally formed on the internal wall 57 of the top bell. However, another embodiment would be possible, in which the retaining lugs 23 may be mounted on the internal wall 57 so as to be displaceable in a direction parallel with the longitudinal mid-axis 24, thereby enabling an adaptation to differently designed housing parts 14.

The linking bush 18 joined to the inner tube portion 17 serves as a means of positioning the installation fitting 2 in the installation pot 10, on the one hand, and also provides a mount for a drive rod 28 of the operating rod 7, preferably in the form of a square pipe 27, in a bearing arrangement 25 or rotary bearing 26.

The linking bush 18 is essentially provided in the form of a tube portion 29, which is connected to the tube portion 17 of the protective casing 18 at oppositely lying end faces in a flush arrangement – in the embodiment illustrated as an example here – in particular is

welded, adhered, etc.. Diametrically opposite anchoring webs 31 are provided on the tube portion 29 extending out from an external diameter 30, which are preferably integrally formed on the tube portion 29, and a bottom face of the anchoring webs 31 forms a support plane 32 extending perpendicular to the longitudinal mid-axis 24.

In an end-face region 33 of the linking bush 18 through which the drive rod 28 extends, a bearing bead 34 projects in the direction of the longitudinal mid-axis 24 and forms a cylindrical bearing surface 35 for the rotary bearing 26 facing the longitudinal mid-axis 24.

The rotary bearing 26 is provided in the form of two half shells 36, 37 and the longitudinal mid-axis 24 extends in a dividing plane 38 of the half shells 36, 37. In the dividing plane 38, the half shells 36, 37 are positioned with respect to one another by means of co-operating positioning means 39, for example a complementary positioning contour of the dividing plane 38. A cylindrical peripheral surface of the half shells 36, 37 forms a running surface 40 of the rotary bearing 26, which co-operates with the bearing surface 35. An orifice 41 provided in the half shells 36, 37 matches the cross-section of the square pipe 27. Also disposed in the orifice 41 lying diametrically opposite are the half shells 36, 37 with driver bolts 42 projecting in the direction of the longitudinal mid-axis 24, which extend through bores 43 provided in the square pipe 27.

The running surface 40 of the half shells 36, 37 is restricted by a flange ring 44 overlapping an end face of the bearing bead 34, on the one hand, and an anchoring ring 45 engaged behind the bearing bead 34 on the other, as a result of which the rotary bearing 26 is positioned in the axial direction on the bearing bead 34 of the linking bush 18.

Pulled onto an end region of the drive rod 28 projecting beyond the rotary bearing 26 is a so-called key nut 46, in particular a square plastic cap on which an operating key fits. The key nut 46 preferably has conical side faces 47 extending towards one another, thereby providing a clearance-free seat for an operating sleeve of the operating key and making it easier to pull off the operating sleeve. The key nut 46 is fixed by means of a catch mechanism 48, formed by a groove 49 in the rotary bearing 26 and catch webs 50 projecting beyond side faces of the key nut 46, so that the catch webs 50 engage with the groove in the fitted state.

Assembly involves fitting the key nut 46 and placing the half shells 36, 37 on the square pipe 27, so that the driver bolts 42 locate in the bores 43, as a result of which this arrangement and the positioning contour enable the half shells 36, 37 to be positioned with respect to one another in the dividing plane 38 and on the square pipe 27. The rotary bearing 26 with the drive rod 28 inserted through it completes the arrangement and can be pressed into the linking bush 18 until the bearing bead 34 is accommodated between the flange ring 44 and the anchoring ring 45, causing an elastic deformation of the anchoring ring 45 and bearing bead 34 during the pressing-in process until the bearing bead 34 assumes the position on the bearing surface 35. Once this position is reached, the rotary bearing 26 and hence the drive rod 28 coupled with the rotary bearing 26 by means of the driver bolts 42 is secured in the axial direction.

The operating rod 7 also has a drive tube 51 drivingly connected to the square pipe 27 with an internal diameter 52 which is bigger than a diagonal dimension 53 of the square pipe 27. In a coupling region 54, the drive tube 51 is provided with indentations forming an internal square head in order to transmit the rotary forces from the drive rod 28 to the positioning spindle 15. An internal cross-section is therefore slightly bigger than an external cross-section of the square pipe 27. This results in the driving connection and also permits a telescopic movement between the square pipe 27 and the drive tube 51.

In an end region 55, the drive tube 51 is of a shape which establishes the driving connection with the positioning spindle 15 and is adapted to a cross-section of a drive pin of the positioning spindle 15. The arrangement is additionally secured by a splint 56 passing through the drive tube 51 and the drive pin.

As may also be seen from Fig. 5, the top bell 13 has supporting webs 58 disposed in a star pattern on an internal wall 57, projecting in the direction of the longitudinal mid-axis 24 in a plane perpendicular thereto. These bound a circular orifice with an internal diameter 59 which is slightly smaller than an external diameter 60 of the drive tube 51. Consequently, these supporting webs 58 provide a support mechanism 61 for coaxially guiding the operating rod 7 and the drive tube 51 at a distance 62 from the rotary bearing 26, which distance 62 is adapted so that it matches the respective installation length selected by means of the telescopic adjustment. Since the internal diameter 59 is slightly smaller than the external diameter 60, the drive tube 51 is protected by a frictional grip so that it can not fall out due to an elastic re-

bound force of the supporting webs 58, which prevents the telescope arrangement of the operating rod 7 from shifting of its own accord when handling the installation fitting 2, for example during transport, assembly, etc.. However, the frictional grip also causes a braking action on the operating rod 7.

As may also be seen from Fig. 2, an end region 63 of the drive rod 28 facing the top bell 13 has an anti-extraction lock 66 formed by at least one flange lug 64 on a side wall 65 of the square pipe 27. This anti-extraction lock 66 restricts the range of displacement of the telescope arrangement between the drive rod 28 and the drive tube 51. Naturally, it would also be possible to provide more than one flange lug 64, for example on each side wall 65 of the square pipe 27.

With respect to fitting, it should also be mentioned that the square pipe 27 provided with the at least one flange lug 64 is introduced into the drive tube 51 already incorporating the coupling region 54 prior to fitting the rotary bearing 26. The end region 55 on the drive tube 51 is then re-shaped in order to establish the drive connection with the positioning spindle 15.

Since the flange lugs 64 project beyond the external contour of the square pipe 27, the flange lugs 64 move alongside the indentations when the telescope arrangement is extracted to maximum length. This prevents any unintentional coming apart of both the telescopic operating rod 7 and hence also the telescopically adjustable protective casing 8.

In a preferred embodiment, the protective casing 8 comprising the linking bush 18, tube portions 16, 17, positioning ring 20, top bell 13 and rotary bearing 26 are made from plastic, preferably from polyethylene. Polyamide is preferably used for the key nut 46.

The operating rod 7, on the other hand, is preferably made from metal, in particular a metal alloy which does not rust, or a metal design which is protected against corrosion may be used.

The embodiments illustrated as examples represent possible design variants of the operating mechanism 1 and it should be pointed out at this stage that the invention is not specifically limited to the design variants specifically illustrated, and instead the individual design variants may be used in different combinations with one another and these possible variations lie within

the reach of the person skilled in this technical field given the disclosed technical teaching. Accordingly, all conceivable design variants which can be obtained by combining individual details of the design variants described and illustrated are possible and fall within the scope of the invention.

For the sake of good order, finally, it should be pointed out that in order to provide a clearer understanding of the structure of the operating mechanism 1, it and its constituent parts are illustrated to a certain extent out of scale and/or on an enlarged scale and/or on a reduced scale.

The underlying objective and the associated solutions proposed by the invention may be found in the description.

Above all, the individual embodiments illustrated in Figs. 1; 2 to 5 constitute individual embodiments of the subject matter representing solutions proposed by the invention in their own right. The associated objectives and solutions proposed by the invention may be found in the detailed descriptions of these drawings.

List of reference numbers

1 Operating mechanism
2 Installation fitting
3 Shut-off valve
4 Supply pipe
5 Installation depth
6 Surface
7 Operating rod
8 Protective casing
9 Telescope arrangement
10 Installation pot
11 Cover
12
13 Top bell
14 Housing part
15 Positioning spindle
16 Tube portion
17 Tube portion
18 Linking bush
19 End region
20 Positioning ring
21 Clamping bead
22
23 Retaining lug
24 Longitudinal mid-axis
25 Bearing arrangement
26 Rotary bearing
27 Square pipe
28 Drive rod
29 Tube portion
30 External diameter
31 Anchoring web
32 Supporting plane
33 End-face region
34 Bearing bead
35 Bearing surface
36 Half shell
37 Half shell
38 Dividing plane
39 Positioning means
40 Running surface
41 Orifice
42 Drive bolt
43 Bore
44 Flange ring
45 Anchoring ring
46 Key nut
47 Side face
48 Catch mechanism
49 Groove
50 Catch web
51 Drive tube
52 Internal diameter
53 Dimension
54 Coupling region
55 End region
56 Splint
57 Internal wall
58 Supporting web
59 Internal diameter
60 External diameter
61 Support mechanism
62 Distance
63 End region
64 Flange lug
65 Side wall
66 Anti-extraction lock

CLAIMS

1. Operating mechanism, in particular an installation fitting, for a shut-off valve fitted in a supply pipe for a liquid medium laid under the ground, in particular for a shut-off slide, with a telescopically displaceable operating rod which can be coupled with a positioning spindle of the shut-off valve and with a telescopically displaceable two-part protective casing comprising an outer tube portion in which an inner tube portion is axially guided as it is displaced, and the outer tube portion facing the shut-off valve has a top bell accommodating a housing part of the shut-off valve, and a linking bush with a rotary bearing for a drive rod of the operating rod is disposed on the inner tube portion on an end region projecting out from the outer tube portion, wherein the rotary bearing is provided in the form of half shells through which the drive rod, in particular a square pipe, extends, and which is mounted in a terminal end-face bearing bead of the linking bush so as to be rotatable, and a support mechanism forming a concentric orifice enclosing the operating rod, preferably a drive tube, in at least certain regions around the periphery is disposed in the protective casing and in the top bell at a distance from the rotary bearing.

2. Operating mechanism as claimed in claim 1, wherein the support mechanism is formed by supporting webs disposed in a star pattern on an internal wall of the top bell projecting in the direction of a longitudinal mid-axis.

3. Operating mechanism as claimed in claim 1 or 2, wherein an orifice of the rotary bearing for the square pipe forms a groove for axially securing a key nut fitted on the square pipe in an end region projecting beyond the rotary bearing, which engages with the groove by means of a catch web.

4. Operating mechanism as claimed in claim 1 or 2, wherein the half shells are secured in position relative to one another by positioning means disposed in a dividing plane, preferably by a complementary positioning contour of contact surfaces extending towards one another in the dividing plane.

5. Operating mechanism as claimed in one of the preceding claims, wherein at least one of the half shells in the orifice has a driver bolt projecting in the direction of a longitudinal mid-

axis extending through a bore in a side wall of the square pipe.

6. Operating mechanism as claimed in one of the preceding claims, wherein the half shells forming the rotary bearing are positioned in the axial direction in a groove-shaped, recessed bearing surface for an annular bearing bead along an end-face orifice of the linking bush.

7. Operating mechanism as claimed in one of the preceding claims, wherein the orifice bounded by the supporting webs of the top bell is circular and is adapted to an external diameter of the drive tube.

8. Operating mechanism as claimed in one of the preceding claims, wherein an internal diameter of the orifice is slightly smaller than an external diameter of the drive tube.

9. Operating mechanism as claimed in one of the preceding claims, wherein the orifice can be made wider due to an elastic deformability of the supporting webs.

10. Operating mechanism as claimed in one of the preceding claims, wherein an increased frictional resistance acts on the drive tube due to an elastic rebound force of the supporting webs.

11. Operating mechanism as claimed in one of the preceding claims, wherein the drive tube is mounted so as to be longitudinally displaceable on the drive rod, in particular the square pipe, and is longitudinally displaceable thereon due to indentations adapted to the external contour of the drive rod but is prevented from rotating.

12. Operating mechanism as claimed in one of the preceding claims, wherein the drive tube has a coupling seat for the positioning spindle of the shut-off valve on an end region facing the shut-off valve.

13. Operating mechanism as claimed in one of the preceding claims, wherein an internal diameter of the drive tube in the region between the indentation and the coupling seat is slightly bigger than a diagonal dimension of the square pipe.

14. Operating mechanism as claimed in one of the preceding claims wherein a flange lug is disposed in at least one side wall in a terminal end of the square pipe facing the shut-off valve projecting in the direction opposite the longitudinal mid-axis.

15. Operating mechanism as claimed in one of the preceding claims, wherein elastically deformable retaining lugs are disposed on the internal wall of the top bell projecting in the direction of the longitudinal mid-axis, in particular are integrally formed thereon.

16. Operating mechanism as claimed in one of the preceding claims, wherein the retaining lugs are disposed in the top bell so as to be displaceable in the direction parallel with the longitudinal mid-axis.

17. Operating mechanism as claimed in one of the preceding claims, wherein two of the retaining lugs are disposed around the periphery of the internal wall, preferably lying diametrically opposite.

18. Operating mechanism as claimed in one of the preceding claims, wherein the tube portions of the protective casing are placed in position due to frictional force by means of a positioning ring enclosing them and applying an elastic clamping force.

19. Operating mechanism as claimed in one of the preceding claims, wherein the linking bush is provided with at least two diametrically opposite anchoring webs projecting beyond an external periphery.

20. Operating mechanism as claimed in one of the preceding claims, wherein the drive rod and the drive tube are preferably made from corrosion-protected metal, in particular a non-rusting metal alloy.

21. Operating mechanism as claimed in one of the preceding claims, wherein the protective casing together with the linking bush, top bell and positioning ring and the rotary bearing are made from plastic, preferably from polyethylene.

The Patent Office

For Innovation

Application No:	GB0612115.6	**Examiner:**	D. Haworth
Claims searched:	1-21	**Date of search:**	4 October 2006

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
		None

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

E1X

Worldwide search of patent documents classified in the following areas of the IPC

E03B

The following online and other databases have been used in the preparation of this search report

WPI,EPODOC,PAJ

Fig.1

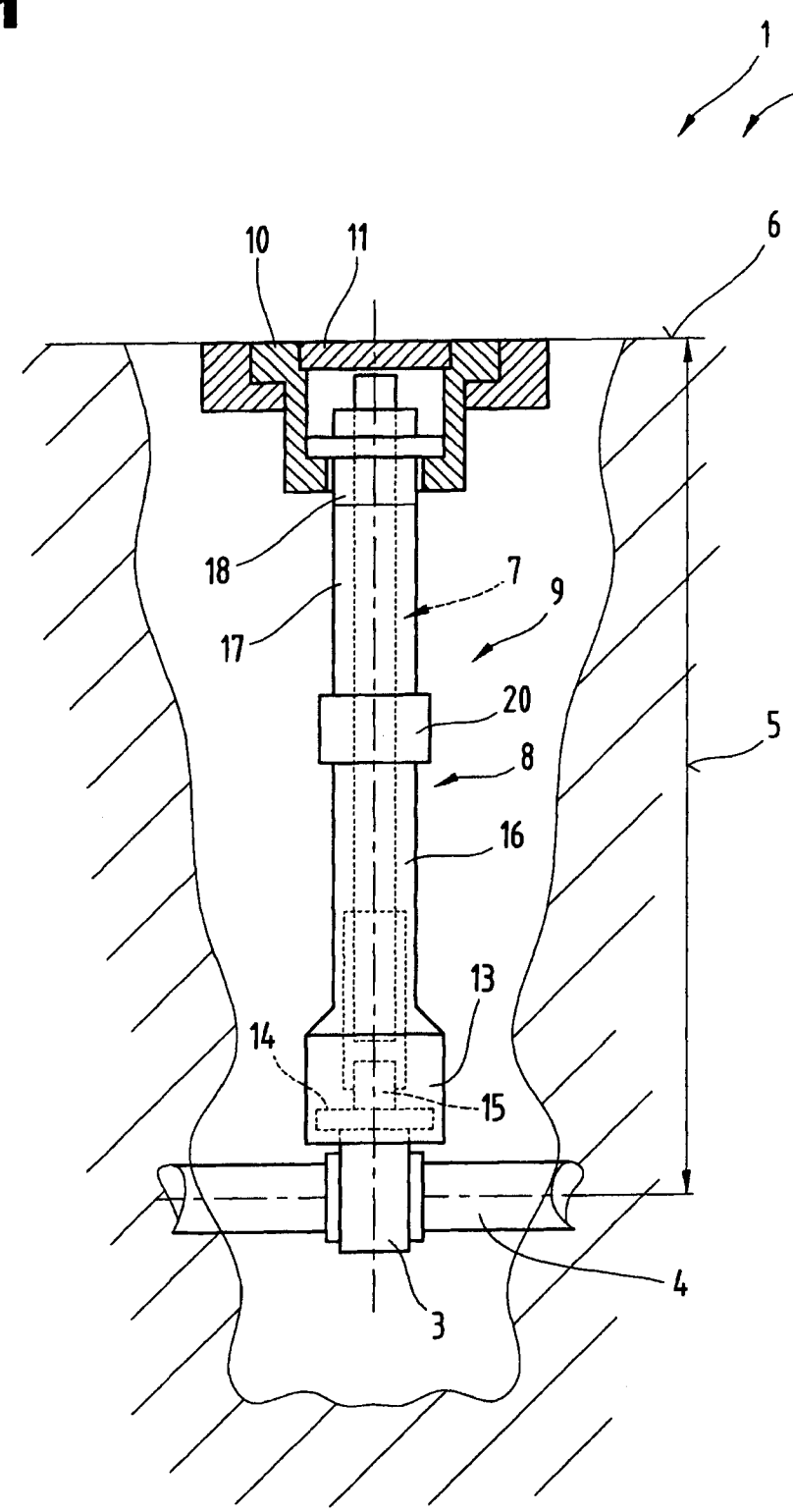


Fig.2

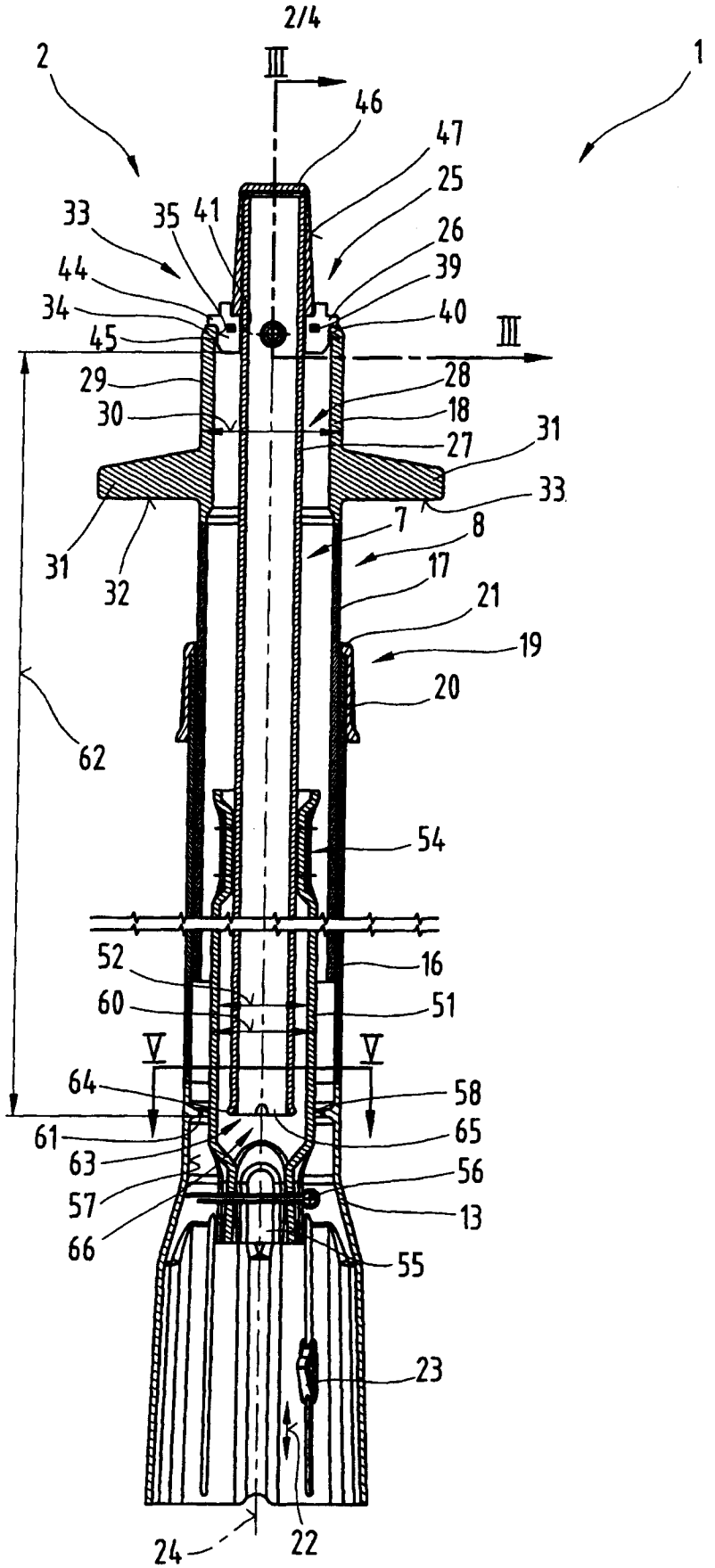

2
1
III
46
47
25
26
39
40
33
35
41
44
34
45
29
30
28
18
27
31
33
7
8
17
21
19
20
62
54
52
16
60
51
V
V
64
58
61
65
63
56
57
13
66
55
23
24
22

Fig.3

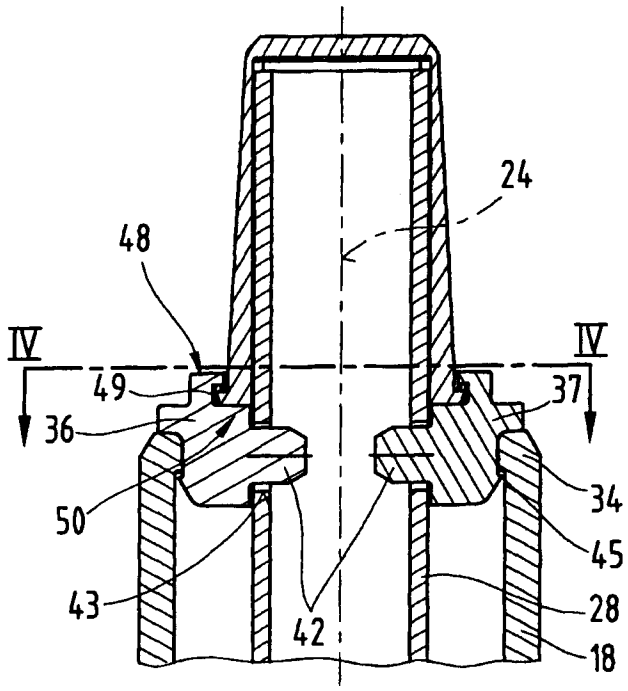


Fig.5

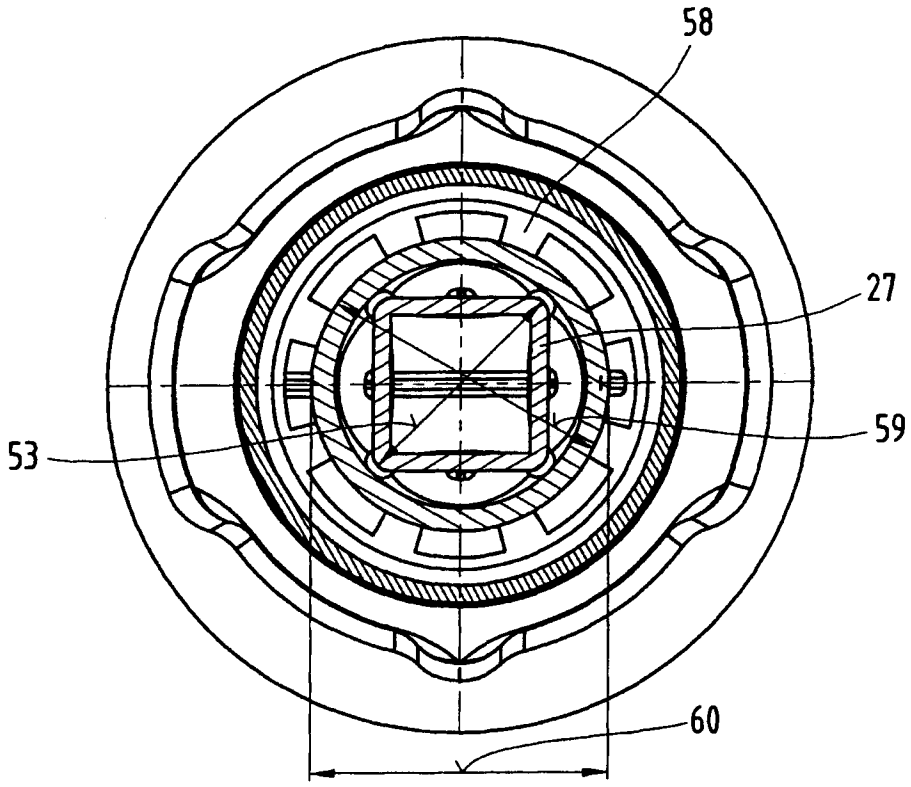
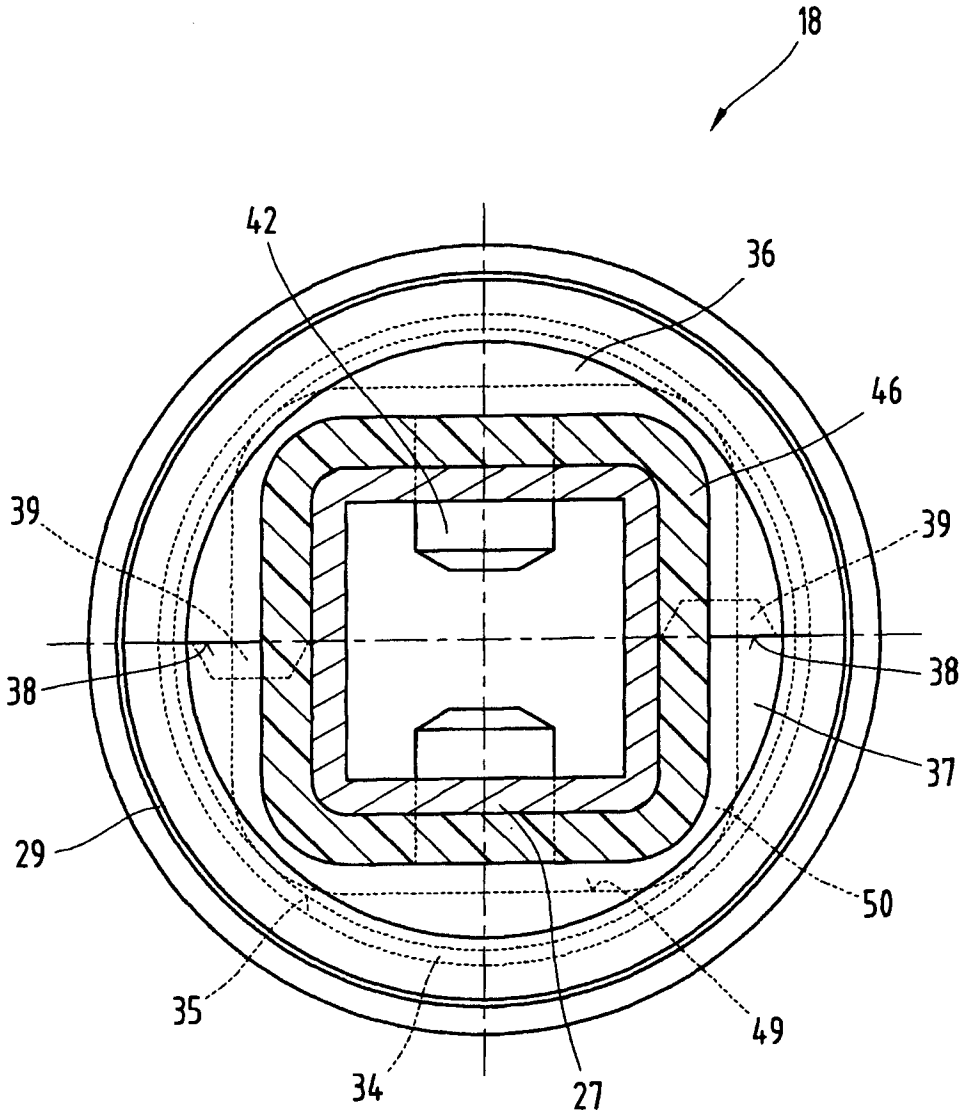


Fig.4



PUB-NO: GB002427892A

DOCUMENT-IDENTIFIER: GB 2427892 A

TITLE: Operating mechanism for a shut-off valve

PUBN-DATE: January 10, 2007

INVENTOR-INFORMATION:

NAME	COUNTRY
HAUSER, ANDREAS	AT
LEHNER, FRANZ	AT

ASSIGNEE-INFORMATION:

NAME	COUNTRY
HAWLE ARMATURENWERKE GMBH E	AT

APPL-NO: GB00612115

APPL-DATE: June 19, 2006

PRIORITY-DATA: AT00044105U (June 30, 2005)

INT-CL (IPC): E03B009/08

EUR-CL (EPC): E03B009/08